SUB Q1

SPECIFICATION

METHOD AND ARRANGEMENT FOR THE REMOTE FEED OF A PLURALITY OF IDENTICAL USERS FROM ONE ENERGY SOURCE

The invention is directed to a method ~~and to an arrangement~~ for the remote feed of a ~~plurality~~ number of identical users from one energy source.

Power supplies that supply subscribers, for example ISDN subscribers, via a network termination unit (NT) are provided in telephone networks. The conditions for the currents to be made available are prescribed in the ~~appertaining~~ pertaining standards of Deutsche Telekom AG, ITU and ETSI. In ~~the~~ a connection phase, ~~thus,~~ each subscriber (line) must be capable of being supplied with a limited current (for example up to 45 mA), whereas a significantly lower current suffices in ~~the~~ a normal operating case. Given ~~an~~ a "worst case" ~~dimensioning~~ sizing wherein all users require the maximum current, the power supply is highly ~~over-dimensioned~~ over-sized for normal operation. A ~~dimensioning~~ sizing that is based on a maximum traffic value, i.e. on a maximum ~~plurality~~ number of active users, ~~meets~~ loads only to an unsatisfactory reduction of the supply capacity to be made available given high traffic values and is often not allowed at all.

SUMMARY OF THE INVENTION

An object of the invention is to ~~specify~~ present/provide a method for the remote feed of a ~~plurality~~ number of users that requires a low supply capacity of the energy source. ~~[...] is equipped. Moreover, a suitable arrangement is to be specified.~~

~~This object is achieved by a power supply according to claim 1.~~

~~Advantageous developments of the invention are recited in the subclaims.~~

The particular advantage is comprised in the reduction of the peak load of the energy source. As a result thereof, ~~this~~ the energy source can be realized smaller and with lower costs.

The peak load is reduced in that the connection of the users, for example telephone subscribers, ensues successively. The current required

is initially higher in the turn-on phase; however, it then drops to a significantly lower value.

~~The check of~~ Checking the flowing currents and ~~a current limitation~~ limiting the current to a standard value assures that the power supply of the undisturbed subscriber connections is assured in case of malfunction.

An intelligent control checks the subscriber terminals, controls the current limitation and repeatedly implements checks of the subscriber terminals, whereby the point is to see that the overall current available is not exceeded.

An exemplary embodiment of the invention is explained in greater detail with reference to Figures.

Shown are

Fig. 1 a schematic diagram of the power supply;

Fig. 2 the connection event of a user; and

Fig. 3 the overall connection event for a plurality of users.

Figure 1 shows ~~the~~ a schematic circuit diagram of the inventive power supply.

A converter WA generates a specific DC voltage that is made available to the subscribers T1 through Tn via controllable current sources QI1 through QIn and a respectively following measuring means ME1 through MEn, being made available via connecting lines L1 through Ln. The respectively flowing currents I_1 through I_n are limited by the controllable current sources QI1 through QIn. The controllable current sources can be arbitrarily constructed. Constant current sources constructed with amplifier elements are often ~~involved~~ employed, their ~~limitation~~ limiting use being capable of being shifted. ~~and these~~ These sources connecting the voltage of the energy source ~~through~~ below the limiting use. Such a controllable current source is disclosed by ~~Patent WPHO4M/2784882~~.

The current source can also be completely blocked, this being symbolically shown in Figure 1 as a switch. A control ST determines the activation of the current limitation at the individual current sources. Measured

values of the currents actually flowing are supplied ~~thereto~~ to the control ST by the measuring instruments ME1 through MEn.

A micro-computer system is suitable as controller ST. The measured values are digitalized before processing.

Figure 2 shows the turn-on event at the ~~(first)~~ first subscriber T1. First, an imaginary current I_r is made available to this ~~subscriber, this~~ subscriber T1. This imaginary current I_r also ~~being~~ is capable of flowing given an active subscriber in the turn-on phase or given a faulty network termination unit and corresponding to a maximum value I_{max} (45 mA). When the network termination unit is error-free, then the current will drop to a normal value I_{normal} ~~I_{norma}~~ (20 mA) after a waiting time Tw. The current limitation is then reduced to the standard value I_{standa} that either lies somewhat above the measured value or corresponds to a constant empirical value (a substantially lower current I_{normi} flow given an inactive subscriber).

Figure 3 shows the overall turn-on event given eight subscribers. First, the maximum value $I_r = I_{max}$ is made available to the first subscriber T1, as described, this dropping to the standard value I_{standa} given an error-free subscriber line. The maximum value I_{max} is then made available to the second subscriber T2 ~~TL2~~ via the line L2, whereby the currents I_r made available overall add up, as can be seen from Figure 3.

When the last subscriber T8 has the maximum current I_{max} made available to him via the line L8, I_r reaches the maximum I_{rmax}. This imaginary overall current corresponds to the maximum capacity of the converter. I_r can be reduced to 8 x I_{standa} when all terminals are error-free.

When a terminal is faulty, the maximum current I_{max} can be made available thereto periodically for testing purposes. It is also possible to dimension the converter such that two or more malfunctioning terminals can also be simultaneously supplied with the predetermined maximum current I_{rmax}.

When a current on the order of magnitude of I_{max} also constantly flows at a subscriber after the turn-on phase, then the subscriber is disconnected and a new connection attempt is periodically started. As an alternative, the

constant supply with the maximum value I_{max} is possible when the power reserve of the power supply allows this.

~~As a modification~~, it is also possible ~~for shortening~~ the turn-on event to a ~~respectively~~ make the maximum current I_{max} available to the individual subscribers of a group, for example T1, T2, T3 without exceeding I_{max}. In the recited example, thus, four subscribers can initially be simultaneously connected (180 mA), then followed by another two or two times ~~4~~ subscriber (~~dependent~~ on the design of the maximum feed current).

After the turn-on phase, the subscriber terminals can continue to be monitored by measuring the feed currents and can be potentially disconnected and reconnected for checking.